

L16 ANSWER 6 OF 48 WPIX (C) 2003 THOMSON DERWENT

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DNC C2000-072951

TI Porous polyvinyl arene particles containing specified amount of volatile organic blowing agent, used to prepare expanded particles and foamed articles.

DC A13 A32

IN BERGHMANS, M F J; BLEIJENBERG, K C; DU MONG, K E I; VERBIST, G L M M

PA (SHEL) SHELL INT RES MIJ BV; (NOVA-N) NOVA CHEM INT SA

CYC 90

PI EP 987293 A1 20000322 (200021)* EN C08J009-22

R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
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WO 2000015703 A1 20000323 (200023) EN C08J009-22

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
OA PT SD SE SL SZ TZ UG ZW

W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES
FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS
LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ
TM TR TT UA UG US UZ VN YU ZA ZW

AU 9961942 A 20000403 (200034) C08J009-22

NO 2001001321 A 20010508 (200134) C08J009-22

BR 9913763 A 20010605 (200138) C08J009-22

EP 1114090 A1 20010711 (200140) EN C08J009-22

R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
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KR 2001073161 A 20010731 (200209) C08J009-22

CN 1318080 A 20011017 (200213) C08J009-22

HU 2001003666 A2 20020128 (200222) C08J009-22

MX 2001002729 A1 20010801 (200238) C08J009-18

JP 2002524638 W 20020806 (200266) 23p C08J009-16

ADT EP 987293 A1 EP 1998-203099 19980916; WO 2000015703 A1 WO 1999-EP6995

19990914; AU 9961942 A AU 1999-61942 19990914; NO 2001001321 A WO

1999-EP6995 19990914, NO 2001-1321 20010315; BR 9913763 A BR 1999-13763

19990914, WO 1999-EP6995 19990914; EP 1114090 A1 EP 1999-948815 19990914,

WO 1999-EP6995 19990914; KR 2001073161 A KR 2001-703292 20010314; CN

1318080 A CN 1999-810963 19990914; HU 2001003666 A2 WO 1999-EP6995

19990914, HU 2001-3666 19990914; MX 2001002729 A1 MX 2001-2729 20010315;

JP 2002524638 W WO 1999-EP6995 19990914, JP 2000-570236 19990914

FDT AU 9961942 A Based on WO 200015703; BR 9913763 A Based on WO 200015703; EP

1114090 A1 Based on WO 200015703; HU 2001003666 A2 Based on WO 200015703;

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IC ICM C08J009-16; C08J009-18; C08J009-22

ICS C08J009-18

ICA C08L025-04

ICI C08L025:04

AB EP 987293 A UPAB: 20000502

NOVELTY - Porous polyvinyl arene particles having an apparent density d0 of 600 - 200 (530 - 320) kg/m3 contain at most 2.0 weight% volatile blowing agent and preferably less than 3.0 weight% water, based on the amount of polyarylene.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for the preparation of

porous polyvinyl arene particles in which expandable polyvinyl arene particles containing 0.5 - 4 weight% 2 -6 C organic blowing agent, based on polyvinyl arene, are pre-expanded to an apparent density of 600 - 200 kg/m3.

USE - The particles are used in the preparation of expanded particles and foamed articles. (claimed).

ADVANTAGE - Particles to be expanded do not have the safety, environmental and foam-related problems of prior art. Dwg.0/0

TECH EP 987293 A1 UPTX: 20000502

TECHNOLOGY FOCUS - POLYMERS - Preferred Particles: The particles when exposed to saturated steam over atmospheric pressure to reach a final temperature of 105 degrees C for 30 seconds, expanded to an apparent density at most three times lower than d0. The particles have pores with

average pore size of 5 - 100 microns are of **polystyrene** and further contain a nucleating agent.

Preferred Process: The expanded particles are prepared by suspension polymerization in the presence of 0.1 - 1 wt.% of a free radical initiator. Pre-expansion is effected by exposing to water at 60 -100 degrees C for 5 -120 minutes.

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EXAMPLE - **Polystyrene** particles contained 2,1 weight% pentane, and had a particle size of 0.4 -0.7 mm, and a **polyethylene wax** content of 0.25 weight%. The particles were placed in a water bath at 100 degrees C for 900 seconds, then dried at 60 degrees C for 15 minutes. The resulting pre-expanded particles had a bulk density d_0 of 500 kg/m³. a pentane content of 1.77 weight% and a water content of 0.2 weight%. The pre-expanded particles were placed in a KURTZ KV450 (RTM) batch steam expander, using steam over atmospheric pressure to reach a final temperature of 105 degrees C. The expansion time was 30 seconds. The particles expanded to a bulk density d of 362 kg/m³. Calculated ratio d_0/d was 1.4

FS CPI

FA AB

MC CPI: A04-C01A; A08-B04; A11-B06; A12-S01A